Sub B1 Cl5 End

$$Ocos = \tfrac{1}{2}\cdot\{ [Usin(1)-Usin(3)] + [(Ucos(2)-Ucos(1))\cdot(Ucos(2)+Ucos(1))/(Usin(2)-Usin(1))] - [(Ucos(3)-Ucos(2))\cdot(Ucos(3)+Ucos(2))/(Usin(3)-Usin(2))] \}/\{ [(Ucos(2)-Ucos(1))/(Usin(2)-Usin(1))] - [(Ucos(3)-Ucos(2))/(Usin(3)-Usin(2))] \} \quad (II),$$

wherein Usin(i), Ucos(i) represent determined sensor signal values for positions i = 1, 2, 3.

REMARKS

Prosecution on the merits has been closed under the doctrine of *Ex Parte Quayle*. No changes have been made in claims 1 and 2 except for changes necessary to remove various informalities, especially errors in the equations presented in claim 2.

A sketch showing the suggested change in Fig. 4 has been attached to this amendment. The suggested change is shown in RED. Approval of the change, which amounts to translation of a German word into English, is respectfully requested.

The formulae on pages 3, 6, 7 and in claim 2 were incorrect because of an improper location of parentheses. The formulae in claim 2 are derived from the two equations on page 6. As one skilled in the art would readily understand without more, both equations are understood as equivalent to the following equation: $x_1^2 + y_1^2 = r^2 = x_2^2 + y_2^2 = x_3^2 + y_3^2$, since points 1, 2 and 3 are located on a circle of radius r running from the center Osin, Ocos to the respective points Usin(i), Ucos(i). Thus it is clear that the left hand brackets of each of the products of the two pairs of brackets in each equation on page 6 erroneously contains an

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extra left parenthesis (or is missing a right parenthesis). This error has been corrected above and the changes for each equation on page 6 have been shown in the appendix below.

The formulae for Osin and Ocos in claim 2 and the specification were written in the FORTRAN language used in programming. These formulae have been redrafted using standard universal math symbols, e.g. "*" which indicates multiplication in FORTRAN has been changed to "·", which is used in standard math formulae to indicate multiplication.

The formulae for Osin and Ocos on page 2 can both be rewritten or understood as being of the following form

$$\tfrac{1}{2} * \{N\}/ [D],$$

wherein N is a numerator and D is a denominator. Also in catching errors it is helpful to not that the formula for Ocos can be obtained from the formula for Osin by replacing Ucos(i) with Usin (i) and replacing Usin (i) with Ucos (i) in the formula for Osin. Thus it is clear that there is a missing right parentheses following Ucos(1) in D for Osin. This latter error has been corrected. Also additional brackets make the formulae easier to understand although they do not seem to correct errors. For example we inserted brackets around Ucos 1 – Ucos(3) in N in the formulae for Osin and made similar change in the formula for Ocos. D in the case of Osin and Ocos is the difference of two ratios and extra brackets were inserted to make this clear in both cases. Both second and third terms in N in both Osin and Ocos clearly included missing right and/or extra left parentheses (this is easily understood since the respective second and third

terms are products of two differences of Usin or Ucos terms, which products are divided by a single difference. Appropriate corrections were made. The corrections are shown in the appendix and the corrected formulae provided above.

Some other formal changes were made in the claims, which do not effect the meaning or scope of the claims, but provide a somewhat clearer statement of the inventive method.

The original abstract was not provided in one paragraph. The abstract was amended to conform to U.S. Patent Office Rules so that it is in one paragraph and some other minor formal changes were made, for example to shorten sentences.

The specification did not have standard section headings. Standard section headings have been added by insertion. A summary of the main claim has also been inserted. According to the rules for making amendments insertions need not be shown in the appendix and have not been.

Other formal changes have been made in the specification to comply with formal rules and provide a better more logical wording in several locations.

The changes in the abstract and specification are only of a formal nature and should not be viewed as substantially changes.

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APPENDIX SHOWING THE CHANGES IN THE CLAIMS, ABSTRACT AND SPECIFICATION

Brackets show deletions and underlining shows additions:

Page 2, in the paragraph from line 4 to line 9, the following changes were made:

The object of the present invention is [to disclose] a method with which [in a simple way] the angular precision in angle sensors, especially in angle measurements at high temperatures, can be improved in a simple way without having to make overly stringent demands in terms of operating tolerance ranges.

Page 2, in the paragraph from lines 10 to 21, the following changes were made:

This object is attained by [a] the above-described method [having the characteristics of claim 1] according to the invention. By means of the method of the invention, the offset of an angle sensor can be calculated and compensated for in a simple way during operation. Compared with conventional versions, this makes it possible to enhance the angular precision, and in particular satisfactory angle measurements can be made at high temperatures, such as in the engine compartment of motor vehicles, The invention makes it possible to increase the ranges of production variation or operating tolerances for the mechanical, magnetic, optical or micromechanical components of the sensors used.

In the Abstract:

The following changes were made in the abstract:

Abstract

A method of calibrating the offset of angle sensors, which determine an angle to be determined on the basis of a sine signal [that can be] assigned to the angle and a cosine signal [that can be] assigned to the angle, [, having the following steps:] This method includes [-] determining the sine signal and he cosine signal for at least three different angles to obtain at least three value pairs, each pair containing one sine signal value and one cosine signal value;

[-] displaying the at least three value pairs in an at least two-dimensional coordinate system that represents a sine signal-cosine signal plane [;] and [

-] determining a point, representing the offset to be calibrated, in the coordindate system with regard to which point the at last three value pairs are located on an arc.

In the Claims:

The following shows the changes in claims 1 and 2:

1(amended). A method for calibrating an [the] offset of an angle [sensors] sensor, which [determine] determines an angle [to be determined] on the basis of a sine signal [that can be] assigned to the angle and a cosine signal [that can be] assigned to the angle, said method having the following steps:

a) [-] determining the sine signal and the cosine signal for at least three different angles (1,2,3) to obtain at least three sine-cosine value pairs (Usin(1),

Ucos(1); Usin(2), Ucos(2); Usin(3), Ucos(3)), each containing one sine signal value and one cosine signal value [.];

b) [-] displaying the at least three value pairs in an at least two-dimensional coordinate system that represents a sine signal-cosine signal plane; and

c) [-] determining a point, representing the offset to be calibrated, in the coordinate system, in relation [with regard] to which point the at least three value pairs are located on an arc.

2(amended). The method [of] as defined in claim 1, [characterized in that] wherein the offset (Osin) of the sine signal is determined in accordance with [an] equation (I) below:

[Osin = ½*{ Ucos(1)-Ucos(3) + [((Usin(2) – Usin(1))*(Usin(2)+Usin(1))/(Ucos(2) - Ucos(1)] - [(Usin(3)-Usin(2))*(Usin(3)+Usin(2)/(Ucos(3)-Ucos(2)] }/ [(Usin(2)-Usin(1))/(Ucos(2)-Ucos(1) - (Usin(3)-Usin(2))/(Ucos(3)-Ucos(2))]]

Osin = ½·{ [Ucos(1)-Ucos(3)] + [(Usin(2)-Usin(1))·(Usin(2)+Usin(1))/(Ucos(2)-Ucos(1))] - [(Usin(3)-Usin(2))·(Usin(3)+Usin(2))/(Ucos(3)-Ucos(2))] }/{ [(Usin(2)-Usin(1))/(Ucos(2)-Ucos(1))] - [(Usin(3)-Usin(2))/(Ucos(3)-Ucos(2))] } ____ (I),

and the offset (Ocos) of the cosine signal is determined in accordance with [an] equation (II) below:

[Ocos = ½*{ Usin(1)-Usin(3) + [((Ucos(2)-Ucos(1))*(Ucos(2) + Ucos(1))/(Usin(2)-Usin(1)] - [(Ucos(3)-Ucos(2))*(Ucos(3) +

Ucos(2)/(Usin(3)-Usin(2)] }/ [(Ucos(2)-Ucos(1))/(Usin(2) – Usin(1)) - (Ucos(3)-Ucos(2))/(Usin(3)-Usin(2))] ,]

Ocos = ½·{ [Usin(1)-Usin(3)] + [(Ucos(2)-Ucos(1))·(Ucos(2)+Ucos(1))/(Usin(2)-Usin(1))] - [(Ucos(3)-Ucos(2))·(Ucos(3)+Ucos(2))/(Usin(3)-Usin(2))] }/{ [(Ucos(2)-Ucos(1))/(Usin(2)-Usin(1))] - [(Ucos(3)-Ucos(2))/(Usin(3)-Usin(2))] } (II),

wherein Usin(i), Ucos(i) represent [the] determined sensor [signals] signal values for [the] positions i = 1, 2, 3.

Should the Examiner require or consider it advisable that the specification, claims and/or drawing be further amended or corrected in formal respects to put this case in condition for final allowance, then it is requested that such amendments or corrections be carried out by Examiner's Amendment and the case passed to issue. Any costs involved should be charged to the deposit account of the undersigned (No. 19-4675). Alternatively, should the Examiner feel that a personal discussion might be helpful in advancing the case to allowance, he or she is invited to telephone the undersigned at 1-631-549 4700.

In view of the foregoing, favorable allowance is respectfully solicited.

Respectfully submitted,

Michael J. Striker,

Attorney for the Applicants

Reg. No. 27,233

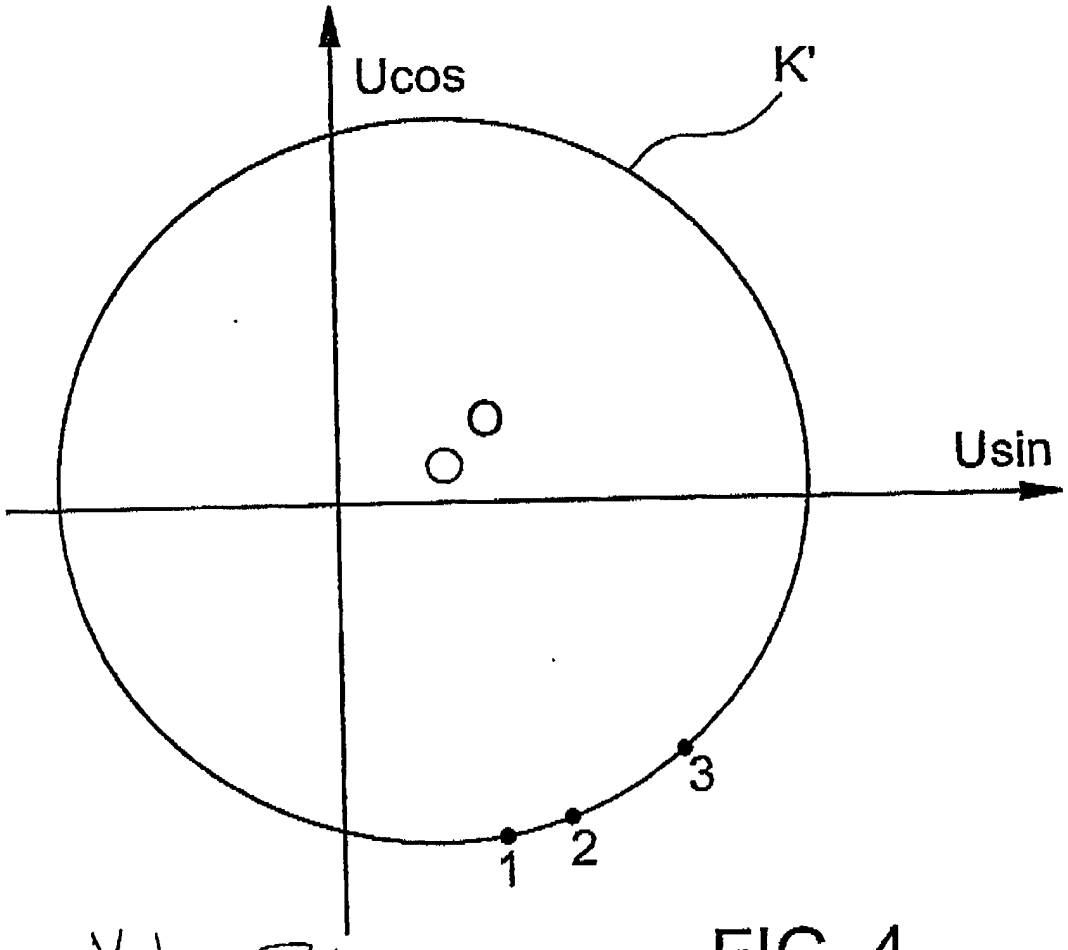

FIG. 4

Value Pairs:
~~Wertepaare~~:
Usin(1), Ucos(1)
Usin(2), Ucos(2)
Usin(3), Ucos(3)